How to preserve potency and continence in localized prostate cancer

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INTRODUCTION
There are three goals in the treatment of localized prostate cancer: (i) control of the cancer; (ii) preservation of continence; (iii) preservation of erectile function. The 2006 European Association of Urology (EAU) guidelines give four treatment options for localized prostate cancer: watchful waiting/active surveillance, hormone therapy, definitive radiotherapy (RT), and surgery [1]. (High-intensity focused ultrasound and cryotherapy are not yet included in the EAU guidelines.) Here, we discuss which of these options might be the most appropriate for achieving the three goals listed above, which have been called the ‘trifecta’ [2].

WATCHFUL WAITING/ACTIVE SURVEILLANCE
A long-term analysis by Bill-Axelson et al. [3] showed clearly that, in men with localized prostate cancer, the control achieved with watchful waiting is poorer than that with definitive RT [3]. Recent data on the quality of life of these patients show that erectile function is at risk, probably because of the heavy psychological impact that cancer often has on these individuals [4].

HORMONE THERAPY
For patients with localized prostate cancer, the 2006 EAU guidelines suggest hormone therapy for those who are unfit for curative treatment but require palliative treatment of their symptoms, and for those who decline definitive therapy (RT or surgical intervention) for fear of complications or other reasons. Hormone therapy can be given in conjunction with RT to men with localized prostate cancer, but hormone therapy alone does not offer control of localized prostate cancer. It also has an adverse impact on sexual function. This treatment option will therefore not achieve the trifecta for patients with localized prostate cancer.

DEFINITIVE RT
Recent data show that, at 10 years of follow-up, overall and cancer-specific survival after RT, whether it be external beam RT (EBRT), intensity-modulated RT, brachytherapy (also called interstitial RT), or brachytherapy plus EBRT, are similar to those achieved after radical prostatectomy (RP) [5]. However, the incidence of erectile dysfunction is 43–62% at 3 years after RT [6], and pain on orgasm and haematospermia caused by brachytherapy can also affect sexual function [7]. Therefore RT does not appear to achieve the trifecta.

SURGERY
For cancer control, long-term follow-up data show excellent outcomes after surgery for localized prostate cancer [2]. Nerve-sparing techniques can improve the preservation of erectile function; published preservation rates are 5–86% [8]. Considering the data from two ‘large-volume’ and well-qualified surgeons, the results, stratified by patient age, appear to be excellent (Table 1) [9,10]. Furthermore, reported urinary continence rates are 85–100% [11]. There is no evidence to date that the use of laparoscopy or robot-assisted techniques has any effect on the outcome of RP [12].

WHICH IS THE BEST TREATMENT?
None of the four options achieves the trifecta, but surgery appears to be the most promising. This promise arises because surgery not only has the best outcomes, but also can be perfected. The outcomes of physical therapies mostly depend on relatively unalterable physical properties, whereas surgical outcomes depend mostly on the surgeon’s experience and knowledge of functional anatomy, and on technical improvements in the surgical methods.

The keys to functional success after RP are:
• selection of the appropriate surgeon;
• selection of the appropriate patient;
• full understanding of the functional anatomy (Fig. 1);
• careful patient follow-up with ‘coaching’ to a successful recovery;
• correct use of drugs.

SELECTION OF THE APPROPRIATE SURGEON
It was shown that the individual surgeon and the cumulative number of RPs performed by that surgeon (the surgical volume) are important predictive factors for the functional outcome afterward [13].

SELECTION OF THE APPROPRIATE PATIENT
Patient factors are also important in predicting the functional outcome after surgery. Age <65 years [14] or <70 years [15] has been shown to be favourable, as has the absence of vascular comorbidities and major bladder abnormalities. The interval between RP and starting to use phosphodiesterase type 5 (PDE5) inhibitors also has an influence on outcome.

FULL UNDERSTANDING OF THE FUNCTIONAL ANATOMY
RP carries a risk of damage to various structures, but this damage can be minimized with a thorough knowledge of the relevant anatomy. For example, incision of the endopelvic fascia can lead to damage of the pudendal nerve fibres and the accessory pudendal artery, and control of Santorini’s plexus can cause injury to the striated urethral sphincter.

Nerve-sparing techniques require a clear understanding of where the nerves are located. After the cornerstone work of Walsh et al. [16], many other researchers published papers on this subject. These abundant reports generated some confusion, especially on the terminology and spread of the nervous rami [17–19]. Further research and outcome-based confirmation are awaited. It is also unclear whether nerve grafting improves the preservation of erectile function; conflicting
data have been published [20–23]. The key technical issues in the preservation of erectile function are dissection without the use of thermal energy and the development of veils containing the nerve branches directed to the corpora cavernosa.

For the preservation of continence, the important technical points are as follows.

- Maintenance of continence is improved by using a ‘no-touch’ technique to dissect the striated urethral sphincter [24].
- Achieving early continence (within the first 3 months) is improved by preserving the bladder neck, the puboprostatic ligaments, or both structures [25].
- The use of a meticulous leak-free anastomosis leads to less fibrosis and consequently to less incontinence (preservation of the bladder neck might also help to achieve this result) [26].
- The relation between nerve-sparing surgery and outcome, in terms of continence, is unclear [27,28].

POSTOPERATIVE PATIENT ‘COACHING’

Education of the patient is important if urinary continence is to be preserved [29,30]. Caffeine, excessive fluid intake and alcohol should all be avoided, and pelvic floor exercises or electrical stimulation of the pelvic floor in conjunction with biofeedback might help. If incontinence develops, overactive bladder should first be excluded. An antimuscarinic agent (solifenacin, 5 mg) and a selective serotonin and noradrenaline reuptake inhibitor (duloxetine, 40 mg twice daily) can be given to control overactive bladder and improve sphincter competence [31].

Erectile function can be improved by encouraging patients to experiment early and to use vaginal lubricants [32]. Activation of the veno-occlusive mechanism can be facilitated by an upright posture, compression with a soft rubber ring at the base of the penis, or vacuum devices. PDE5 inhibitors can be prescribed for selected patients; intracavernosal injection with vasodilator therapy might be tried in those who have no response to PDE5 inhibitors.

CONCLUSION

From a survey of the four options offered in the 2006 EAU guidelines for treating localized prostate cancer, radical surgery (open, laparoscopic, or robot-assisted) appears to be the best chance that can be offered to patients. In particular, surgery is the most promising option for preserving erectile function and urinary continence when treating localized prostate cancer.

CONFLICTS OF INTERESTS

The authors have declared no conflicts of interests.

REFERENCES

5 Zelefsky MJ, Chan H, Hunt M, Yamada Y, Shippy AM, Amols H. Long-term outcome of high dose intensity modulated radiation therapy for patients...
with clinically localized prostate cancer. J Urol 2006; 176: 1415–9


11 Ravery V. How to preserve continence after radical prostatectomy. Eur Urol Suppl 2005; 4: 8–11


20 Scardino PT, Kim ED. Rationale for and results of nerve grafting during radical prostatectomy. Urology 2001; 57: 1016–9

21 Walsh PC. Nerve grafts are rarely necessary and are unlikely to improve sexual function in men undergoing anatomic radical prostatectomy. Urology 2001; 57: 1020–4


28 Burkhard FC, Kessler TM, Fleischmann A, Thalmann GN, Schumacher M, Studer UE. Nerve sparing open radical retropubic prostatectomy – does it have an impact on urinary continence? J Urol 2006; 176: 189–95


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Abbreviations: EAU, European Association of Urology; (EB)RT, (external beam) radiotherapy; PDE5, phosphodiesterase type 5; RP, radical prostatectomy.